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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------------|------------------------|
| 10/533,302 | 06/16/2005 | Akira Nakashima | IPA-007 | 4777 |
| 32628 7590 01/30/2008 KANESAKA BERNER AND PARTNERS LLP 1700 DIAGONAL RD SUITE 310 ALEXANDRIA, VA 22314-2848 | | | EXAMINER MCDONOUGH, JAMES E | |
| | | | ART UNIT 1793 | PAPER NUMBER |
| | | | MAIL DATE 01/30/2008 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,302

Applicant(s)

NAKASHIMA ET AL.

Examiner

James E. McDonough

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2008.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10 and 29-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, and 29-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7, 10, and 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsu et al. (USP 6,451,436) in view of Raman et al. (USP 5,770,275) in view of Senderov et al. (US 2003/0152510) in further view of Taguchi et al. (JP-406,173,054 A).

Regarding claims 1-7 and 29-33

Komatsu teaches a coating liquid for forming films with a low dielectric constant, comprising a tetra alkyl ortho silicate (see formula I) and a chlorosilane (see formula II) (abstract).

Although, Komatsu does not explicitly teach the use of alkoxy silane, Komatsu does teach the use of chlorosilane, however, because Raman teaches organofunctional silanes such as chlorosilanes and that alkyl alkoxysilanes are functionally equivalent (column 7, lines 4-12) and further teach that in an optimized process tetraethyl orthosilicate (TEOS) and methyltrimethoxy (MTMS) silane are used in combination, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Komatsu, by substituting alkyl alkoxy silanes for the chlorosilanes, as suggested by Raman.

Although, Komatsu does not explicitly disclose the use of a tetraalkyl ammonium hydroxide, Senderov teaches that an organic structure directing agent such as tetrapropyl ammonium hydroxide can be used, and teaches that this tetraalkyl ammonium hydroxide is preferable because other than their structure directing properties they also provide a source of alkalinity and not only can they hydrolyze and depolymerize silica, but serve to also direct the crystallization process (paragraph 0043), therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Komatsu, by incorporating tetrapropyl ammonium hydroxide, as suggested by Senderov.

Although, Senderov does not explicitly teach the purification of tetraalkyl ammonium hydroxide, Senderov does teach the use of tetraalkyl ammonium hydroxide, however, because Taguchi teaches a process for the high purity preparation of tetraalkyl ammonium hydroxide where, impurities such as alkali metals and halogens are removed (abstract) and it is well known to remove impurities from material feed

stocks as even low level impurities can have deleterious effects on electronic components. Even though Taguchi is silent to the exact purity of the tetraalkyl ammonium hydroxide, it would be expected to at least overlap with the claimed range this is especially so since applicants do not teach how they perform this purification process, therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Senderov, by purifying the tetraalkyl ammonium hydroxide, as suggested by Taguchi.

Regarding claim and 34

Raman teaches that the gelling time can be controlled by adjusting the ratio of (TAOS) to (AS) and, teaches specific ratios of 90:10 to 45:55 (TAOS)/(AS) respectively (column 8, lines 15-61), which overlaps with the range of the instant claims, therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Komatsu, by adjusting the ratio of (TAOS)/(AS), as suggested by Raman.

Regarding claim and 35

Senderov teaches a TPAOH ratio based on SiO_2 of 0.25 which reads on the instant claims, and teaches that this is a result effective variable and that this value can be adjusted up (paragraph 0108), therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Komatsu, by adjust the amount of (TAOS), (AS) and (TAAOH) relative to each other, as suggested by Senderov.

Regarding claims 37 and 38

These are intended use claims and do not serve to add to the patentability of compositions claims.

Claims 10 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsu et al. (USP 6,451,436) in view of Raman et al. (USP 5,770,275) in view of Senderov et al. (US 2003/0152510) in view of Taguchi et al. (JP-406,173,054 A) as applied to claim 1-9 and 29-35 above, and further in view of Burger et al. (US 2004/0041779).

Regarding claims 10 and 36

The teachings of the references other than Burger et al. have been discussed above.

Burger teaches that silicon coating compositions usually contain less than 35 wt % solids, since effective filming and adhesion of the coating require the addition of further solvents (paragraph 0011), therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of the above reference, by adjusting the amounts of (TAOS) and (AS), to less than 35 wt %, as suggested by Burger:

Response to Arguments

Applicant's arguments have been fully considered, however, they are not persuasive as they are deemed to be improper piece meal analysis of the references, particularly applicants only discuss the reference of Komatsu, however the rejection is a

103 rejection based on a combination of references that applicants have completely ignored. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

To further illustrate examiner has copied the part of the rejection dealing with tetraalkyl ammonium hydroxide and its purification below.

Although, Komatsu does not explicitly disclose the use of a tetraalkyl ammonium hydroxide, Senderov teaches that an organic structure directing agent such as tetrapropyl ammonium hydroxide can be used, and teaches that this tetraalkyl ammonium hydroxide is preferable because other than their structure directing properties they also provide a source of alkalinity and not only can they hydrolyze and depolymerize silica, but serve to also direct the crystallization process (paragraph 0043), therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Komatsu, by incorporating tetrapropyl ammonium hydroxide, as suggested by Senderov.

Although, Senderov does not explicitly teach the purification of tetraalkyl ammonium hydroxide, Senderov does teach the use of tetraalkyl ammonium hydroxide, however, because Taguchi teaches a process for the high purity preparation of tetraalkyl ammonium hydroxide where, impurities such as alkali metals and halogens are removed (abstract) and it is well known to remove impurities from material feed

stocks as even low level impurities can have deleterious effects on electronic components. Even though Taguchi is silent to the exact purity of the tetraalkyl ammonium hydroxide, it would be expected to at least overlap with the claimed range this is especially so since applicants do not teach how they perform this purification process, therefore, it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to modify the teachings of Senderov, by purifying the tetraalkyl ammonium hydroxide, as suggested by Taguchi.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 1/26/2008



J. A. LORENZO
SUPERVISORY PATENT EXAMINER